

Protecting Australian Maritime Trade 2022



**Australian Naval Institute
&
Naval Studies Group
University of New South Wales (Canberra)**

Background & Acknowledgements

This report is produced by the Australian Naval Institute and the Naval Studies Group at the University of New South Wales (Canberra). It revisits and updates material presented at the 2019 Goldrick Seminar on *Maritime Trade and its Implications for Australia's Defence*. That Seminar resulted in a 2020 Report on the subject which is available at:

<https://navalinstitute.com.au/wp-content/uploads/2019-Goldrick-Seminar-Report-Version-4.pdf>

The proceeding and other material from the 2019 Goldrick Seminar is available at:

<https://navalinstitute.com.au/goldrick-seminar-archive/2019-goldrick-seminar-maritime-trade-and-its-implications-for-australias-defence/>

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Vice Admiral P.D. Jones AO DSC RAN Retired
President, Australian Naval Institute &
Adjunct Professor, Naval Studies Group
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Cover: A ship enters the Port Hedland inner harbour. (Pilbara Ports Authority).

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Executive Summary

- Australia is the 5th largest user of shipping services in the world.
- Maritime trade accounts for over 99% Australia's imports & exports by volume and over 79% by value.
- One-in-five imports is predominantly sourced from one trading partner.
- Australian container trade is only 1% of the global traffic and is on a hub & spoke model with the hub being Singapore. Only Melbourne can handle larger capacity Panamax container ships should the Singapore port be unavailable.
- Australia only produces 22% of its petroleum products from own reserves. The remainder comes from imported crude or processed products from Asia and the Middle East. Low transport fuel holdings significantly reduce Australian resilience and could constrain Australian Government options in a crisis.
- Australia only has about a dozen ships of any note, none of which carry oil, LPG or containers.
- Australian businesses and consumers are particularly exposed to disruption of sea supply with high dependence on manufactured imports for essential and everyday goods.
- Australia is particularly exposed to disruption of its sea supply with its high dependence on manufactured imports and low fuel stockholdings.
- In order to build greater economic resilience as it relates to seaborne trade a whole of Government strategy will be needed, arguably led by the Department of Prime Minister & Cabinet.
- There are three key aspects to protecting Australian maritime trade. They are:
 - Increasing knowledge and analytical skills related to Australian maritime trade.
 - In cooperation with allies and partners, improving proficiency in shipping protection including developing doctrine, tactics and a comprehensive suite of Maritime Trade Routing plans.
 - Align Strategy and Policy with the need to protect maritime shipping. This also requires a whole of government approach.



Introduction

1. In 2019 the Goldrick Seminar was held at the Australian Defence Force Academy on *Maritime Trade and its Implications for Australia's Defence*. One seminar speaker noted,

Maritime trade is more important to Australia than any time since the arrival of the Second Fleet bringing much needed food to Sydney in 1789. As a result of decades of globalisation, maritime trade not only provides the means for much of our exports but provides the vital imports we need to sustain our society. The vast majority of any stock in any shop is imported by sea.
2. Since the 2020 publication of the Goldrick Seminar Report there have been significant developments that warrant the subject to be revisited in an updated report and some exploration of the 'so what'. These matters include:
 - The COVID-19 pandemic disrupting global trade and supply chains.
 - The Russian invasion of Ukraine and attendant pressures on global food and energy supplies.¹
 - The growing capabilities of the People's Liberation Army-Navy, which is now the world's largest and the second most powerful after the United States Navy.
 - A continued deterioration in global security situation, including in the 'Blue Pacific Continent' region, and
 - The advent of the AUKUS Defence arrangements.
3. These developments have raised an awareness in policy makers within the of the need to take some measures to improve Australia's resilience in the area of maritime trade and the economy more generally. This report seeks to contribute to these policy deliberations.

¹ Ukraine produces about one-eighth of the world's traded wheat.

Definitions

4. It is useful before further discussion to clearly define 'maritime trade' and 'sea supply'. Maritime trade is typically the import and export of physical goods in medium and large sized merchant ships which move cargo across the sea at the lowest possible ton-per-mile cost. It includes coastal and trans-oceanic trade and offshore economic exploitation such as fisheries and mining, which includes natural gas and oil. It is part of the global system of systems which enable the movement of these cargoes, their financing, distribution and sale. During peacetime free-flowing maritime trade permits national prosperity. In war it divides into two broad categories:
 - During wartime, Maritime Trade finances the war and allows a nation to fight and possibly win the war COVID-19 pandemic more fully exposed weaknesses in global trade and supply chains.
 - Its critical wartime subset is Sea Supply, the existentially essential goods without which the nation loses the war. Related definitions are contained in Figure 1.

Maritime Trade, Sea Supply and the Island Nation	
Type	Effect on Island Nation
Maritime Trade. Free flowing maritime trade finances the war & allows a nation to fight and possibly win.	
Maintained	Able to fully prosecute a war, cannot be defeated, has opportunity to win
Disrupted	Able to prosecute a war, cannot be defeated, may retain opportunity to win
Degraded	Unable to prosecute offensive operations, cannot win, may be defeated.
Sea Supply. Subset of existentially essential goods without which the nation loses the war.	
Maintained	Able to prosecute a war, cannot be defeated.
Disrupted	May be able to prosecute defensive war, may be forced to come to terms
Degraded	Forced to surrender

Figure 1: Maritime Trade, Sea Supply and the Island Nation

The Nature of Australian Maritime Trade

5. Since the first European settlement Australia has been dependent on maritime trade for both sustenance of its society (sea supply) and export earnings. Shipping accounts for about 99% of our imports and exports of goods, including fuel. Australia's exports are worth about \$314b annually, of which 57% by value is from mining². Text Box 1 encapsulates some of the key facts and figures of Australia's maritime trade.
6. In recent years as a result of the rise of globalization and the decline of local manufacturing, has seen a marked growth of Australian dependence on imports to maintain an increasingly complex society has grown markedly. This situation has been thrown into stark relief by the COVID-19 pandemic. It exposed supply weaknesses for a myriad of key imports; some such including additives to diesel fuel were previously understood to be so vulnerable and so critical.
7. In addition, the importance of trade patterns were more clearly brought into focus. An example was the rippling disruption arising from the global container shortage caused by the closure of the Shanghai's port. This and other factors saw a significant increase in the ship operating costs. Chartering costs have surged by up to 773% from late May 2020 to end 2021. Marine fuel costs rose from USD\$155.5/ tonne in April 2020 to US\$435.5/tonne eighteen months later. The one-day cost of operating a container ship that normally operates to Australia increased from about US\$30,200 per day in mid-June 2020 to about US\$151,400 by the end of 2021.³ It is expected that these costs will reduce but this will take time.
8. Improving national resilience is not an insurmountable challenge and this was highlighted in the July 2021 Productivity Commission report on Vulnerable Supply Chains.⁴ The key findings were that:
 - One-in-five imports is predominantly sourced from one trading partner.
 - One in twenty imports were vulnerable to concentrated sources of supply. That about 300 products worth about A\$20 billion are identified as originating from concentrated sources of global supply and, by this combination of criteria, might be vulnerable. Two thirds of these vulnerable imports came from China. Many of these products though were not deemed essential.
 - Key imports are found across many product groups, including:
 - chemicals (such as pseudoephedrine, sodium hydroxide, the pesticide precursor toluidine, hydrogen peroxide, anti-knock preparations, and the solvent 2-ethoxyethyl acetate),
 - liquid fuels (such as natural methane gas),
 - pharmaceutical products (such as sterile surgical and dental adhesion barriers)
 - minerals (such as unrefined copper),
 - metals (such as iron and steel, and nickel oxide),
 - fertilisers (such as superphosphate),
 - plastics (such as polyethylene),

2 *Characteristics of Australian Exporters 2017-2018*. Australian Bureau of Statistics.

3 <https://www.shippingaustralia.com.au/ship-operating-costs-up-773-demand-up-supply-up-congestion-up-shipper-propaganda-up/>

4 2021 Vulnerable Supply Chains Report, Productivity Commission, See <https://www.pc.gov.au/inquiries/completed/supply-chains/report/supply-chains.pdf>

- transport equipment and parts; and
 - military equipment.⁵
 - To mitigate supply chain risks strategies could include accepting the residual risk, stockpiling, supplier or market diversification, contingent contracting, and developing domestic capability. Several strategies are likely to be required.
 - Some risk mitigation measures need to be quite specific. Arguably this should include the local refining of aviation fuel.
 - The Government could focus its efforts is on ensuring that companies “do not face unnecessary constraints on how they plan for and respond to disruptions. A trusted and rules-based trading environment, for example, facilitates firms’ ability to diversify their suppliers in preparation for, and their ability to find alternative suppliers in response to, a supply chain disruption. A responsive regulatory environment is another example.”⁶
 - The Government should periodically review and update the list of goods and services that are vulnerable to supply disruptions and deemed essential. This role could be undertaken by the Office of Supply Chain Resilience, which the Government established in 2021 to monitor vulnerabilities and coordinate whole-of-government responses to ensure access to essential goods.
9. The Productivity Commission Report provided some useful data such as the breakdown of imports by value and imports (Figure 2). Relevant to resilience was the where alternate sources of supply could come for Vulnerable Australian Imports from China (Figure 3).

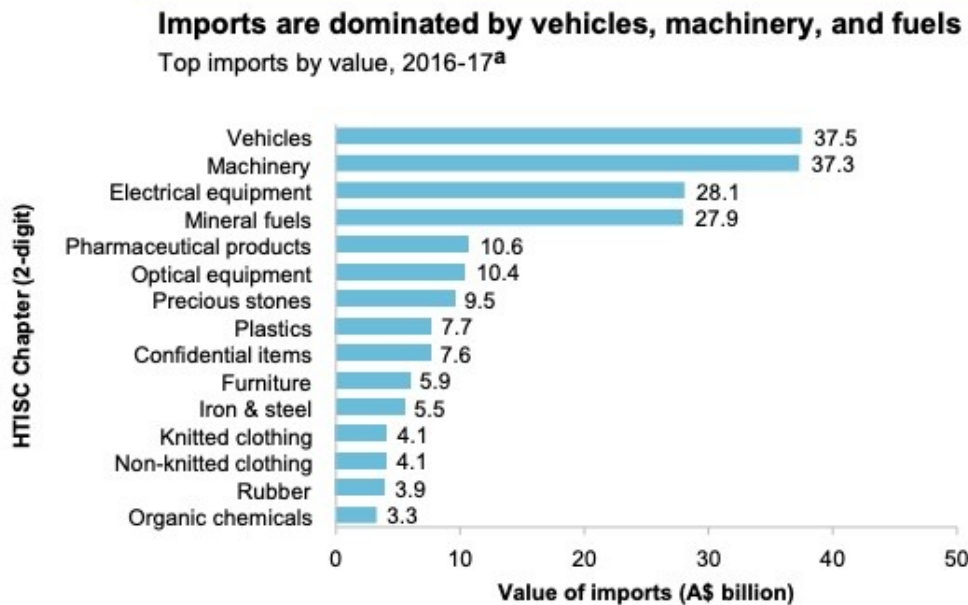
Australian Maritime Trade: Facts & Figures

- Australia is the 5th largest user of shipping services in the world.
- Maritime trade accounts for over 99% Australia’s imports & exports by volume & over 79% by value.
- Australia carries less than 0.5% of its foreign trade in Australian-flagged ships.
- In 2017-19 Australia’s seagoing international imports & exports was over \$600 billion.
- In 2016-17 5,879 ships made 32,801 port calls at Australian ports.
- In 2016-17 Australia imported 5950 different products with a combined value of A\$272 billion. These imports came from over 200 sources, although the majority by value were from China, the US, Japan, Thailand & Germany.
- In 2021 exports by sea were 935 million tonnes & imports were 80 million tonnes.
- In 2021 26,400 ship arrivals by 6,170 unique foreign flagged ships. Of these 1,100 were crude or product tankers, 69% bulk carriers and 5% each container ships and tankers. The main imports by value are motor vehicles & parts; electrical, optical & other specialised equipment; fuel; pharmaceuticals; & chemicals.
- Australian container trade is only 1% of the global traffic & is on a hub & spoke model (the hub is Singapore).
- Over 70 Australian ports engaged in foreign trade of which 30 are responsible for 90% of vessel trade & traffic. 10 Australian ports accounted for 88% of seaborne export cargo.

Text Box 1

5 2021 Vulnerable Supply Chains Report, Productivity Commission, p.59.

6 Ibid, p.8.



^a The ABS confidentialises imports of certain products, which prevents the products or supplier from being identified.

Data source: ABS (*Merchandise Imports and Import Clearances*, 2020, unpublished).

Figure 2: Australian Imports by Value and Category.

Fuel Imports

10. Australia imports the majority of its required petroleum. Key aspects to this important energy source are:
 - 40% of these products are refined in Australia, of which 22% is Australian crude. The remainder mainly comes from Malaysia (27%), Middle East (13%), Indonesia (7%), Gabon (6%), New Zealand (5%) and Papua New Guinea (5%).
 - 60% of these products are refined overseas and mainly come from Korea (27%), Singapore (26%), Japan (15%), Malaysia (10%), China (9%) and India (6%).⁷
11. Three of the seven Australian refineries closed during 2013-15. Imports of petroleum products increased from ~10m tonnes to ~18.6m tonnes to offset the decline of domestically refined products. In recent years the Australian Government established the Fuel Security Service Payment, which provides local refineries with a subsidy to 2030 when their margins fall below a certain rate. Additionally, the Government will provide up to \$302 million for infrastructure upgrades to create jobs and help refiners bring forward their production of better-quality (lower sulphur) fuels. The intention is to increase the minimum level of diesel stocks by 40% by 2024, reflecting the importance of diesel to the economy. Additionally, the Government will provide up to \$200 million in competitive grants over three years to support the construction of an additional 780 megalitres of onshore diesel storage. Finally the Government purchased \$94 million of crude oil to store in the United States for an initial period of 10 years. This measure helps Australia meet its international treaty obligations to hold 90-days of oil reserves.
12. **Other Critical Imports.** As a technologically advanced country but with low levels of electronics manufacturing, Australia is very reliant on imports. Australia is not along in this situation, particularly as devices such as mobile phones and computers have

⁷ 2021 Vulnerable Supply Chains Report, Productivity Commission, p.84.

become commodities. One enabler for this trend has been the high volume production of advanced semi-conductors. Taiwan produces 60% of the global supply with just a handful of others providing the remainder. Semi-conductor production needs large amounts of fresh water and Taiwan's 2020-21 drought dramatically reduced output. As a result of this and a recognition of the strategic risks associated with Taiwan's political future, some countries are investing in indigenous production.

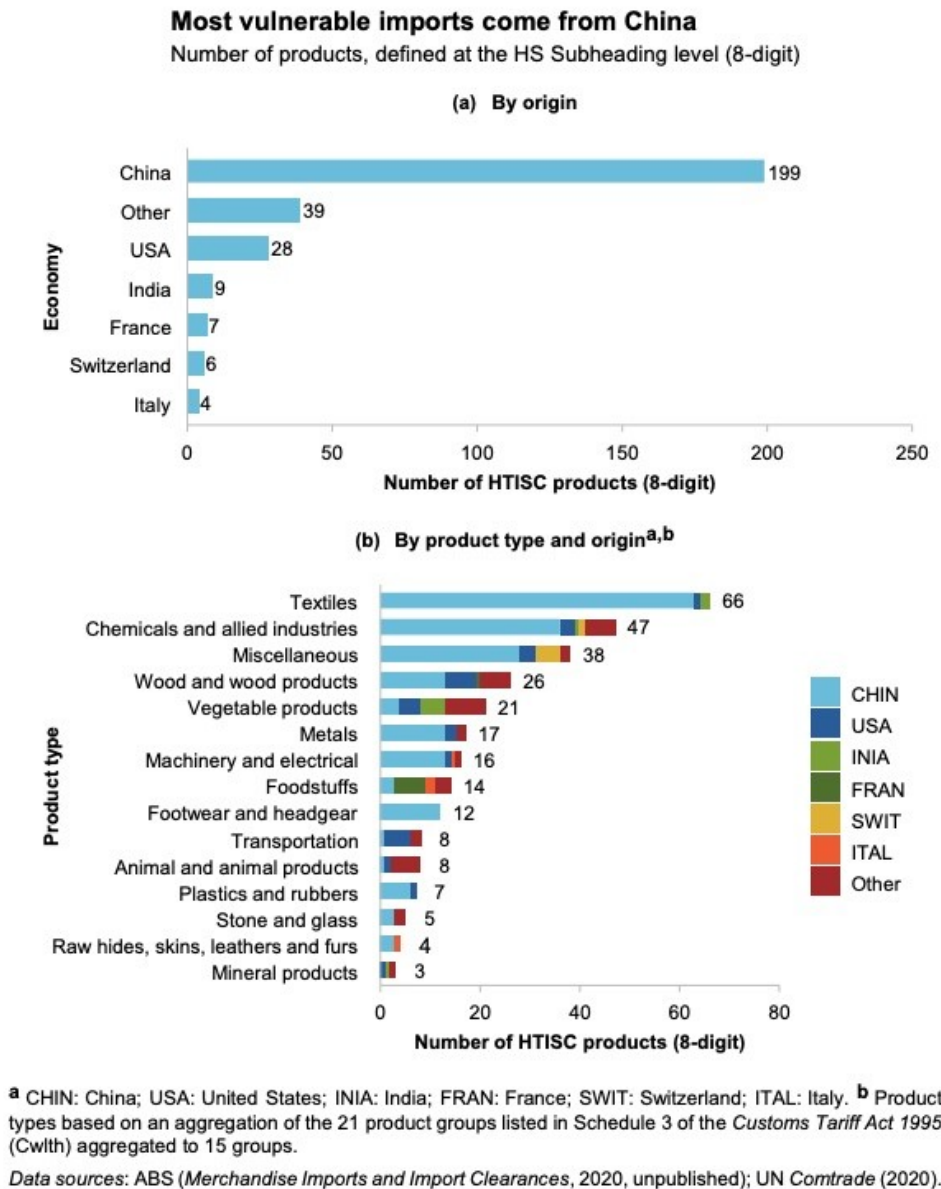


Figure 3: Most Vulnerable Australian Imports from China & Alternate Sources.

13. **Australian Ports.** Ports are a critical part of the maritime trade structure and one of the most vulnerable parts of the system. Just ten ports accounted for 88% of Australia's seaborne exports in the year 2016-17. Newcastle, the Mackay coal port complex, the Pilbara LNG and iron ore ports, and the LNG port of Gladstone are globally significant. In Australia only the port of Melbourne can receive the larger

300m Panamax container ships that supply hub ports.⁸ Under Melbourne's *Port Development Strategy 2050* the larger New Panamax and possibly the Ultra Large Container Vessels will be able to be received⁹. Singapore is a critical source to Australia of refined petroleum products. This trade requires a minimum of five product tankers. In 2021 three of these were Chinese-flagged.

Trade Patterns

14. The Australian trade patterns in 2012 as shown in Figure 4 have not changed. They have continued to grow but the proportions are the same. Note the dominance of Australian dry cargo trades (in blue) with the liquid hydrocarbons trade (in red) from the North-West Shelf. Dampier exported 167 million tonnes (Mt) in 2020-21 alone. Gladstone's trade has grown significantly and in 2019/20 the port exported over 122.5Mt, led by coal (71.7Mt), LNG (22.1Mt) and aluminum and associated products.
15. The container trades (in yellow) can be seen coming on from the Suez-Canal/Red Sea and from the Sunda Strait. Singapore is the regional Container Hub Port and it feeds the Australian 'Spoke Trade'. The container trade from the Australian east coast to the Pacific region is clearly shown. The Japan-Australia vehicle trade (in purple) can just be discerned, it runs direct Japan-Bismarck Sea-Jomard Passage-Australia east coast. The new Gladstone LNG trade also follows this route. About 40% of Australia export trade goes via the South China Sea, about \$130 billion per annum.



Figure 4: Australian Trade Patterns

16. **Strategic Sea Supply for Japan.** It is important to recognise that Australian LNG is a critical fuel for Japan and South Korea's base-load electricity generation. If the WA originated supply had to be re-routed via the Makassar Strait, due to a closure of the

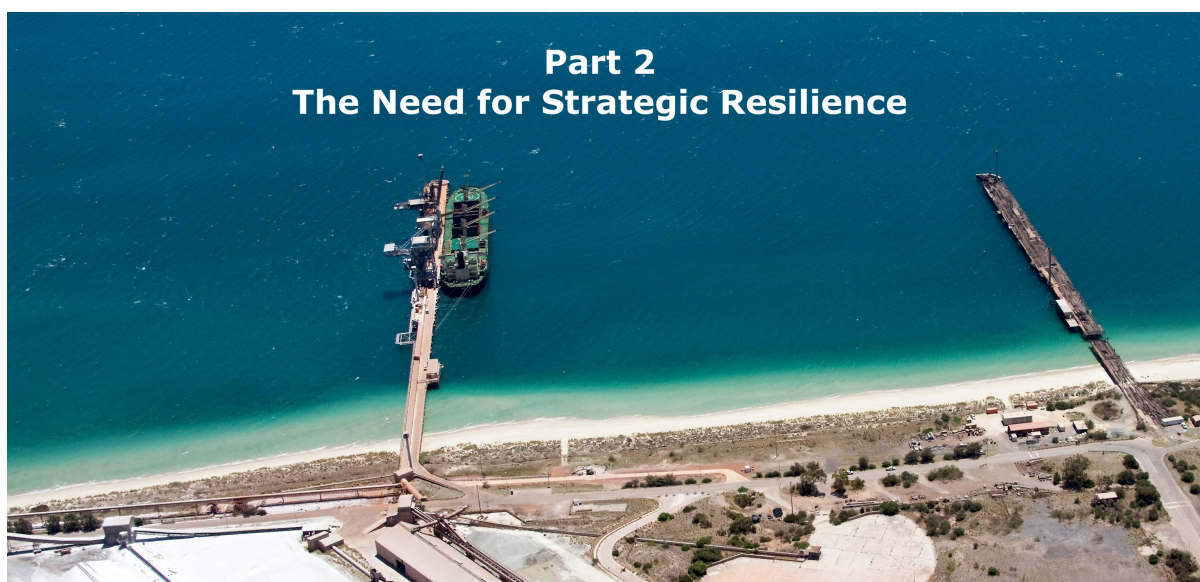
⁸ Panamax ships are 290m x 32.3m (55-65,000dwt).

New Panamax use the new locks & are 366m x 55.25m (120,000 dwt)

⁹ <https://www.portofmelbourne.com/facilities-development/port-development-strategy/>

direct route, roughly a quarter of carrying capacity would be lost. If rerouted via the Torres Strait and Bismarck Sea the loss would be about 50%. This would require the size of the LNG tanker fleet to be doubled to lift today's LNG tonnages. Inability to access the South China Sea would be strategically significant for Japan and South Korea.

17. In terms of container traffic, Singapore and Melbourne are strategically important. As previously noted Singapore is the nearest hub for large container ships to transfer loads to smaller ships for the Australia-New Zealand routes. If access to Singapore was lost then the nearest other hubs are Colombo, Kelang, and Tanjung Pelepas. There are others in ports on the South China Sea.
18. **Australian Sea Supply.** Volume and value do not necessarily correlate to strategic importance. Some Australian imports are small in value and volume, but are of critical importance for the maintenance of the economy. An example is the specialised catalysts used in oil refinery cracking towers.



Part 2

The Need for Strategic Resilience

Recent Shocks

19. As highlighted by the Russo-Ukrainian War and the August 2022 disruption to maritime trade routes (MTR) near Taiwan, such events can have significant economic, political and humanitarian impacts. These can be heightened in the case of the Ukraine where the sheer size of the country's contribution to the world food supply can have a global impact. Even accidents, such as the 2021 blocking of the Suez Canal by the container ship *Ever Given* which impeded 12% of global sea trade, can significantly disrupt finely tuned global supply chains.

Australian Energy Sea Supply

20. Australia is very exposed in energy sea supply. Australia's crude oil resources are small by world standards and depleting faster than there are new discoveries. Indeed it is unlikely that further major oil fields will be developed. Australia's transport fuels import dependency grew from around 60% in 2000 to over 90% by 2013 and continues to worsen.
21. Australia lost 42% of its refining capacity between 2012 and 2015 when three refineries were closed leaving just four refineries in-country. The strategic holding of

fuel in the continental US means its practical access is problematic and arguably does not constitute a viable strategic reserve. There is no contingency plan to guarantee its shipment.

22. Australia's vulnerability extends beyond liquid fuel stocks. Fertilisers and other goods are vital for Australia's survival¹⁰. The topic of strategic resilience demands further investigation in worsening strategic circumstances. There is insufficient research and data on Australia's maritime trade resilience, in all areas such as the stock levels of various goods (especially liquid fuel and phosphates), skills, mobilisation, and ADF resourcing for trade and port protection.

Merchant Ships

23. In recent decades the Australian shipping register has been decimated. Today there is a very low level of ship ownership and/or national flagged merchant shipping. There are just a dozen ships useful for international trade and none of them are LPG, fuel, heavy lift or container ships. This decline in the Australian flagged fleet has been largely the result of uncoordinated Government policy settings in areas of shipping regulation, taxation, superannuation. Of note other high wage nations such as the Nordic countries have shown that through policy settings an appropriately sized Fleet can be fostered. Even Switzerland has a larger merchant fleet than Australia.
24. **Mariners.** A maritime industry is reliant on its mariners. The *Shipping Reform (Tax Incentives) Act 2012* has been a dismal failure. Other high wage nations such as the Nordic countries have shown that through policy settings an appropriately sized Fleet can be fostered. Even Switzerland has a larger merchant fleet than Australia. Fixing the main problem is simple: adopt the British, Philippines and other nations' policies of reducing the Australian income tax on mariner incomes earned overseas at zero: it will be normally be remitted to Australia and spent here. Remittance earnings are a major part of Philippines foreign earnings. Australian governments have refused to do this for over a century now.



Australia's largest flagged ship is Shell's floating liquefied natural gas facility *Prelude*.

¹⁰ Australia is almost entirely dependent on imported fertilisers & in the lead up to World War II the RAN was instrumental in the stockpiling of the commodity. See Jones, P.D. *Australia's Argonauts*, Echo Books, Geelong, 2016, p. 265.

25. **Strategic Fleet.** In periods of crisis or war Australia's easy access to cheap shipping disappears. It is noted that this issue has been recognized by the Commonwealth Government which plans to have established a 'strategic fleet', of up to a dozen vessels including tankers, cargo, container and roll-on-roll-off vessels.¹¹ This is an opportunity to address mariner training, beneficial ship ownership, and mariner taxation problems in one fell swoop.

Climate Change and Weather Extremes

26. In recent years the increase in the severity of major weather events has started to impact on Australian port operations. This has extended beyond those northern Australian ports routinely subject to cyclones. Ports such as Brisbane have had to be closed for periods up to a week at a time due to heavy rainfall and floods. This can impact on available stocks of petroleum.
27. Globally, there have been other disruptions. As an example, Panama Canal operations have also been affected by unusually severe droughts. In the operation of the system of locks, 250m litres of fresh water is used for every ship passage. This equates to 9bn litres of fresh water for the daily movements. Periodically, as a result of water restrictions, tonnage limits have had to be instituted. It is expected that mitigation strategies will increasingly have to be put in place in some ports and littoral areas of the globe.

Summation

28. An analysis of Australia's critical imports should form a basis for developing strategies to mitigate these risks. This is most readily seen in the energy sector where local petroleum production, increased use of rail, transition to electric, LPG and hydrogen vehicle propulsion would reduce imports and the resultant number of ships to be escorted.

¹¹ <https://www.gg.gov.au/about-governor-general/media/opening-first-session-forty-seventh-commonwealth-parliament-parliament-house-canberra>

Part 3

Protecting Maritime Trade



29. In times of strategic instability the challenge for Defence would be identifying what shipping is of critical importance for protection and allocating sufficient assets for their protection. In some scenarios this trade may be, in part, protected by allies and partners, but in other situations they would require end-to-end protection.
30. Therefore, unlike most if not all other maritime nations, Australia is not now and unlikely in the short term to be self-sufficient in maritime trade. This has implications for the disruption of trade in times of tension and in war. Australia cannot requisition a merchant fleet. This has implications for potential ADF operations in war but even in peacetime, where large-scale regional disaster relief efforts would be unable to call upon significant numbers of civil shipping, meaning that such operations would be entirely reliant on the Navy, with flow-on effects for concurrency tasking.
31. There are six key aspects to protecting Australian maritime trade. These will be discussed in detail below, but they are:
 - Being able to have good levels of knowledge and awareness of maritime trade. This then leads to detailed analysis to determine what is the essential shipping that needs protection as it relates to a specific strategic situation. This may require the tasking of some of Australia's 'Strategic Fleet' as well as international shipping companies and related parties.
 - Develop Maritime Trade Routing plans and instructions.
 - Depending on the operational situation, there may be a requirement to provide defences to the home and destination ports and their approaches.
 - Assigning ADF elements for a combination of route and ship protection. Once again depending on the operational situation this include intelligence as well as air, surface and subsurface assets.
 - By the nature of maritime trade all these aspects will invariably require Australia to work with different Allies and partners to provide effective protection.

- Finally, there a need for there to be Strategy and Policy alignment with the need to protect maritime shipping. This includes any necessary adjustments to the Force Structure and the Defence Integrated Investment Plan.

Australia's Maritime Trade Protection Experience

- Prior to World War II the key preparations of Australia's trade protection were:
 - Installation of port defences such as indicator loops, booms & contingency plans to arm small civil craft.
 - Development of corvettes, minesweepers & converted trawlers for coastal anti-submarine & mine countermeasures operations.
 - Procurement of cruisers to protect trade from surface attack with destroyers & frigates commissioned to counter the submarine threat.
- In 1938 Navy Office assessed that the task of trade protection was beyond the size of the Australian Naval Squadron. Captain John Collins wrote a minute titled *A Plea for Smaller Sloops in Larger Numbers*. It was concluded 42 such ships of local, robust & simple design were needed. This resulted in Australia's largest & most successful warship program, the Bathurst class corvettes¹².
- During World War II the Australia's first joint (called Combined at the time) operational intelligence centre was established in 1940 to counter the German raider threat to sea trade¹³. A convoy system was also subsequently instituted on the Australian Station. During the war Australian merchant shipping was subjected to surface, air, sub-surface (including mining) attack.
- The partially completed port defences of Sydney in largely foiled the 1942 Japanese midget submarine attack.
- During the two world wars convoying regimes were instituted. The rationale for convoying is that a convoy reduced the areas of ocean that a merchant vessel can be located, and where they are, they should be adequately protected.
- During the Cold War, Australia's maritime forces' priority was to protect trade from the Soviet submarine & maritime air threat. At sea, the focus of the South East Asian Treaty Organisation (SEATO) maritime exercises was trade protection & Australia sponsored the 'Albatross' series.
- In developing the force structure, operations research used the Soviet submarine force as the dominant threat. The *1971 Destroyer Numbers Study* is an example of this work. It used various scenarios including trade protection to determine a fleet which included 17 destroyers.¹⁴ During this period the RAN was orientated in large measure to anti-submarine warfare (ASW). This was reflected in considerable resources allocated to indigenous ASW capabilities such as the Ikara missile, the Mulloka sonar & the Barra sonobuoy programs.
- The RAN Research Laboratory (later incorporated into DSTO) developed a comprehensive operational analysis capability of RAN exercise system performance. Also in this period RAN further developed the naval control of shipping capabilities within a global naval co-operative context.
- In the 2003 Iraq War strategically important merchant shipping was escorted & some ships had embarked armed detachments.
- In anti-piracy operations off the Horn of Africa, a protected sea lane technique was applied.

¹² Jones, P.D. *Australia's Argonauts*, Echo Books, Geelong, 2016, pp. 263-264.

¹³ Ibid, p.387.

¹⁴ Stevens, D.M. *The Royal Australian Navy, The Australian Centenary History of Defence, Volume III*, Oxford University Press, Melbourne, 2001, p.218.

Knowledge and Awareness

28. To better understand the issues there is a range of studies and contingent planning that could be undertaken. These could be undertaken by the Navy, the Australian War College and Headquarters Joint Operations Command. Some work has been done as evidenced by the Navy coastal shipping studies in the 1980s and more recently Sea Power Centre – Australia’s commissioned research on Australia’s ports.
29. The Navy’s Maritime Trade Organisation (MTO) Branch and other Defence planners need to be able to work with other Government departments and agencies to identify the essential shipping that needs protection as it relates to a specific strategic situation. To achieve this there needs to be a standing inter-departmental structure and one that reaches out to commercial entities to obtain accurate information.
30. A useful adjunct to this process would be the regular staging of tactical floor wargames involving operational and strategic participants from Defence and other government agencies to draw out and explore the intricacies of protecting shipping and providing a common baseline of knowledge.
31. In any major crisis, an early issue will be war risk insurance. For example a regional conflict could make the South China Sea a war risk zone and marine insurance may be unaffordable. No company will sail into a conflict zone without full war risk insurance, meaning Australia will have to implement War Risk Insurance schemes just as it did in 1914 and 1939.

Maritime Trade Routing

32. Maritime Trade Routing can be one of the most effective means to protect trade by diverting them from threats. It is important for the Navy to have its MTO Branch closely integrated within the Navy and the broader Defence organisation. Through their work the MTO Branch is an invaluable interface with merchant shipping associations, companies and mariners. The Navy has an extant MTO doctrine which needs to more broadly understood.
33. As for the MTO organisation itself, there is an issue inherent in the operating model whereby the very knowledge and experience they bring lies in the extent of their interconnectedness with industry. This can make it difficult for their personnel to do more than 20 days a year in uniform. This warrants investigation, such as more formal Navy-Industry secondment arrangements. Their greater presence within the Defence would help grow Australia’s ability to protect maritime trade.

Port Defence

34. Australia’s ports and their approaches lack any fixed or dedicated Defence assets and are vulnerable to mining and asymmetric disruption. Analysis is required as to the level of required protection. While clearly designed to counter a different potential threat an examination of the inter-war port defence planning mentioned in Text Box 2 is instructive.
35. A review by Defence, Border Force and state agencies of ports security is required as part of the maritime trade system. This data could be used by Navy and Defence planners to develop contingencies for possible disruptions to Australia’s port system. This would be especially useful in outlining potential requirement for resourcing. Available harbour defence assets are limited to counter even moderate disruption to Australia’s ports, especially considering that most of the top ten ports in Australia are

geographically quite remote from the RAN's fleet bases in the east and west. Inter-agency co-operation will be essential.

36. An enabler to maritime trade and the national economy more generally is its vital undersea communications cables. They carry over 95% of the telecommunications traffic. There are fewer than five entry/exit points on the continent often near ports. They operate in a very poorly regulated legal regime. They are vulnerable to interference at their shore interface, in coastal waters and at sea. More analysis is needed on the vulnerabilities of these undersea links.

Protection at Sea

37. While the ADF has a long and generally successful record of protecting maritime trade it has been many years since it was involved in significant maritime trade protection operations. Since that time maritime operations and merchant ships have changed dramatically. It will be important to conduct a fundamental examination into the doctrine and tactics required to protect contemporary merchant ships. Less visible but none the less important, is training and documentary artifacts that are required for these operations. An examination of World War II convoy reports and forms demonstrates the level of sophistication involved.
38. In future conflicts a variety of measures, including convoying, may be required. This may be driven for no other reason than the number of ships requiring protection. This requires analysis and the development of doctrine and tactics.

Collaboration

39. By virtue of past practice and enduring international linkages the Navy and the Australian Defence Force is well placed to develop the required co-operation for the protection of merchant shipping. In the Blue Pacific region the Pacific Fusion Centre, may provide a useful means to monitor and protect merchant shipping in the region.
40. By the nature of much of the trade, it is in the interest of supplying and receiving countries to play their part in protecting shipping. Bi-lateral discussions can identify critical trade, such as LPG shipments and develop doctrine and tactics to protect it. This could become a tangible focus of future bi-lateral exercises.

Policy & Strategy

41. It is vital that there be an alignment with Government policy and strategy with the requirements to protect maritime trade. As an example of the existing disconnect, while the notion of 'free and unfettered trade' is mentioned in the *2016 Defence White Paper* the issue of protection of sea trade is not. Also noteworthy is the failure to mention the centrality of Singapore to our sea supply of oil and manufactured goods. The *2020 Strategic Update* is equally silent on these issues.
42. The absence of a focus on trade protection is reflected in the force structure. The promulgated force structure is demonstrably insufficient for the protection of both Australia's sea supply and its partial defence of sea supply from Australia and critical to our Allies. For example as noted in the data above about 1,700 container ship movements occur annually to Australia. The Defence White Paper is also silent on the need to protect Australian ports and their approaches as well as vital infrastructure such as undersea cables. It would be useful to review the force structure in the light of protecting merchant shipping. One example would be examining the potential to enhance the capabilities of the Arafura class for protection of merchant shipping.

43. Maritime trade protection is not just the remit of the ADF alone, rather it is a whole of government issue, involving multiple agencies, as well as the private maritime sector. There are multiple stakeholders, who often do not fully understand what other relevant agencies or organisations are doing in the realm of maritime trade. As an example, the Home Affairs' *Profiling Australia's Vulnerability Report*¹⁵ provided conclusions, relevant to maritime trade and maritime security. It noted that Australia's biggest vulnerabilities are the intersections and interdependencies in the systems that support society in this country from local to global levels. Australia needs to understand the consequences of past and present decisions that can have the perverse consequence of building in more vulnerability.
44. Another area where policy can be strengthened is preparedness both within Defence and within the nation. There is a growing acknowledgement that at a whole-of-nation level, the framework for Australia's preparedness should be a National Security Strategy which includes a maritime trade element. In the past Defence in Australia produced a War Book which covered some of these whole of government preparedness issues and actions.
45. In the UK a similar approach was taken, but it was more comprehensive with its underpinning Committee of Imperial Defence arrangements. This is shown at Annex A. Essentially, all identifiable risks to the maintenance of the UK economy and potential war effort were assessed and mitigation strategies identified and implemented.¹⁶ This structure provided the basis on which Britain prepared for World War II. It has clear application to contemporary Australia. A contemporary Australian approach would require the leadership of the National Security Committee of Cabinet with the Department of Prime Minister and Cabinet orchestrating the sub-committee structure.

Conclusion

46. The unfettered operation of Australia's maritime trade is fundamental to the nation's security. The Covid-19 pandemic and the deteriorating global security situation has brought into relief its importance and its vulnerabilities. It is prudent to review and implement measures to mitigate risks to this vital element of our national security. This must be a whole of government endeavour.

Annex:

- A. The Supporting Committee structure for the British Committee of Imperial Defence.

¹⁵ <https://www.aidr.org.au/media/6682/national-resilience-taskforce-profiling-australias-vulnerability.pdf>

¹⁶ *The Memoirs of General Lord Ismay* are most revealing on this subject and include an outline on the sub-committee structure and how it evolved.

The Supporting Committee Structure for the British Committee of Imperial Defence

